REMARKS

The present response is to the Office Action mailed in the above-referenced case on November 03, 2005. Claims 31-36 are presented for examination. Claims 31 and 34 are objected to due to informalities, and claim 36 is objected to as being a duplicate claim. Claims 32 and 35 are rejected under 35 U.S.C 112, second paragraph as being indefinite. Claims 31, 33, 34 and 36 are rejected under 35 U.S.C 102(e) as being anticipated by Cao of record, and claims 32 and 35 are rejected under 35 U.S.C. 103(a) as being anticipated by or obvious over Cao.

Applicant has again carefully studied the reference of Cao, and the Examiner's objections, rejections and remarks in the instant Office Action. In response, applicant herein amends the necessary claims and canceled duplicate claim 36 in order to overcome the Examiner's objections. Applicant further amends the base claims to positively recite the method and system using the sub-network of applicant's invention, and to more particularly recite the connectivity between each individual node internal to the sub-network. Applicant also provides further arguments which clearly show the art of Cao fails to teach all of subject matter contained in applicant's claims, as amended.

Applicant believes the Examiner has not given applicant's sub-network the patentable weight that is warranted, because this feature was recited in the preamble of the claim prior to amendments made herein. Applicant therefore amends system claim 34 to positively recite in the body of the claim applicant's label-switching sub-network, each node in the sub-network connected by one or more physical parallel links, and that the system is characterized in that the number of LSPs created is equal to the least-common multiple of the number of links between each individual internal sub-network node in the node path, wherein the number of links between the sub-network nodes may differentiate. For convenience and as an aid in prosecution, applicant reproduces claim 34 below as amended.

Claim 34 as amended now recites:

34. (amended) A routing system in a data-packet network comprising:

a label-switching sub-network with one ingress node and one egress node, with at least two nodes internal to the sub-network, each node connected by one or more physical parallel links;

a mechanism for creating a sufficient number of label-switched paths (LSPs) from the ingress node to the egress node such that each packet flow has a unique LSP; and

a mechanism for associating each packet flow with one of the created LSPs;

characterized in that the number of LSPs created is equal to the least-common multiple of the number of links between each individual internal sub-network node in the node path, wherein the number of physical links between the sub-network nodes may differentiate.

Applicant's claim 31 recites the method for practicing the invention in accordance with the limitations of claim 34, and has been similarly amended. Claims 32 and 35 are accordingly canceled.

Regarding claim 34, the Examiner has stated that Cao teaches applicant's routing system in a data-packet network having a label switching sub-network as claimed, with at least two nodes internal to the sub-network connected by a plurality of parallel links (col.6, lines 1-23). Applicant has amended the claim to positively recite the label-switching sub-network, each node in the sub-network connected by one or more physical parallel links, and that the system is characterized in that the number of LSPs created is equal to the least-common multiple of the number of links between each individual internal sub-network node in the node path, wherein the number of links between the sub-network nodes may differentiate. Applicant argues that Cao fails to teach applicant's sub-network and sub-network node connectivity as taught in the specification and now recited in the base claims as amended.

Referring now to Cao, applicant agrees that Fig. 1 teaches a network of label-switching routers including an ingress and egress router, but applicant argues that Cao fails to teach or suggest a sub-network of any kind, nor does Cao explicitly teach r suggest that nodes internal to a sub-network are each connected by one or more physical

parallel links. Cao teaches one network of label switching routers, not a sub-network within a data packet network as in applicant's invention and claims as amended. Further, it is clear as illustrated in Fig. 1, that the nodes of Cao's network are not connected by a plurality of physical parallel links; rather they are each connected by a single link.

Cao teaches establishing a pair of explicitly routed label switched paths from the ingress router to the egress router, and the egress router chooses one of the pair to be the primary path for the data flow, the remaining path is the secondary path. If the primary path fails for whatever reason, only then is the data flow directed along the secondary path. In Cao, each node in the network is connected by a single physical link and two paths are established through the label-switching nodes from the ingress node to the egress node.

In applicant's invention however, as is clearly illustrated in Fig. 3, a label-switching sub-network (122) is provided having an ingress and egress node and a plurality of label-switching nodes (17), each node connected by one or more physical parallel links (19). An important object of applicant's invention is to distribute all of the data traffic evenly across all of the physical links without producing out-of-order delivery even after one or more link failures. The multiple physical parallel links connecting the internal sub-network nodes to each other enable applicant's important limitation wherein the number of possible paths created is equal to the least-common multiple LCM of the number of physical links between each internal sub-network node which enables an even distribution of data flow over all of the physical links without producing out-of-order delivery. The LCM process was explained in detail in applicant's previous response. Label switching can therefore be used more efficiently in such an environment having multiple parallel links, allowing multiple data paths to be established simultaneously, and bundling of paths requiring fewer control resources compared to those required for establishing path individually, thereby saving considerable processing time leading to improved network operation.

Cao teaches establishment of a primary LSP and a secondary LSP between each node wherein the count is always two links, and the secondary link is utilized only upon

failure of the primary link. Cao fails to teach applicant's sub-network and multiple physical parallel links connecting each sub-network node. The art of Cao therefore falls short of teaching the load balancing effect of the LCM method as described in applicant's invention and recited in the claims as amended.

Applicant believes that claim 34 as amended and argued above is now clearly patentable over Cao, and respectfully requests that the reference be withdrawn. Applicant's claim 31 recites the method in accordance with applicant's system claim 34 and has been similarly amended. Applicant believes base claims 31 and 34 are then unarguably patentable as amended and argued above.

Depending claims 32 and 35 have been rejected as anticipated or obvious over Cao, however, both claims have been canceled in this response rendering the rejection moot. Duplicate claim 36 has also been cancelled to overcome the Examiner's objection. Depending claim 33 is then patentable on its own merits, or at least as depended from a patentable claim.

It is therefore respectfully requested that this application be reconsidered, the claims be allowed, and that this case be passed quickly to issue. If there are any time extensions needed beyond any extension specifically requested with this amendment, such extension of time is hereby requested. If there are any fees due beyond any fees paid with this amendment, authorization is given to deduct such fees from deposit account 50-0534.

Respectfully Submitted,
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